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1 Adaptive distributed data management with weak consistent replicated data
Richard Lenz
February 1996 **Proceedings of the 1996 ACM symposium on Applied Computing**
Full text available: pdf(1.07 MB) Additional Information: full citation, references, index terms

Keywords: coherency control, consistency island, distributed data management, need-to-know principle, weak consistency replication

2 Applications of Byzantine agreement in database systems
Hector Garcia Molina, Frank Pittelli, Susan Davidson
March 1986 **ACM Transactions on Database Systems (TODS)**, Volume 11 Issue 1
Full text available: pdf(1.26 MB) Additional Information: full citation, abstract, references, citings, index terms, review

In this paper we study when and how B Byzantine agreement protocol can he used in general-purpose database management systems. We present an overview of the failure model used for Byzantine agreement, and of the protocol itself. We then present correctness criteria for database processing in this failure environment and discuss strategies for satisfying them. In doing this, we present new failure models for input/output nodes and study ways to distribute input transactions to processing nod ...

3 Concurrency control in multilevel-secure databases based on replicated architecture
Boris Kogan, S. Jajodia
May 1990 **ACM SIGMOD Record , Proceedings of the 1990 ACM SIGMOD international conference on Management of data**, Volume 19 Issue 2
Full text available: pdf(1.23 MB) Additional Information: full citation, abstract, references, citings, index terms

In a multilevel secure database management system based on the replicated architecture, there is a separate database management system to manage data at or below each security level, and lower level data are replicated in all databases containing higher level data. In this paper, we address the open issue of concurrency control in such a system. We give a secure protocol that guarantees one-copy serializability of concurrent transaction executions and can be implemented in ...

4 Reducing I/O demand in video-on-demand storage servers
Leana Golubchik, John C. S. Lui, Richard Muntz
May 1995 **ACM SIGMETRICS Performance Evaluation Review , Proceedings of the 1995 ACM SIGMETRICS joint international conference on Measurement and**

modeling of computer systems, Volume 23 Issue 1

Full text available: pdf(1.37 MB) Additional Information: full citation, abstract, references, citings, index terms

Recent technological advances have made multimedia on-demand services, such as home entertainment and home-shopping, important to the consumer market. One of the most challenging aspects of this type of service is providing access either instantaneously or within a small and reasonable latency upon request. In this paper, we discuss a novel approach, termed adaptive piggybacking, which can be used to provide on-demand or nearly-on-demand service and at the same time reduce the I/O demand on the ...

5 Development of an object-oriented DBMS

David Maier, Jacob Stein, Allen Otis, Alan Purdy

June 1986 **ACM SIGPLAN Notices , Conference proceedings on Object-oriented programming systems, languages and applications**, Volume 21 Issue 11

Full text available: pdf(1.12 MB) Additional Information: full citation, abstract, references, citings, index terms

We describe the results of developing the GemStone object-oriented database server, which supports a model of objects similar to that of Smalltalk-80. We begin with a summary of the goals and requirements for the system: an extensible data model that captures behavioral semantics, no artificial bounds on the number or size of database objects, database amenities (concurrency, transactions, recovery, associative access, authorization) and an interactive development environment. Object-orient ...

6 Towards a framework for integrating multilevel secure models and temporal data models

Niki Pissinou, Kia Makki, E. K. Park

November 1994 **Proceedings of the third international conference on Information and knowledge management**

Full text available: pdf(825.03 KB) Additional Information: full citation, abstract, references, index terms

Within many organizations the number of databases containing classified or otherwise sensitive data is increasing rapidly. Access to these databases must be restricted and controlled to limit the unauthorized disclosure, or malicious modification of data contained in them. However, the conventional models of authorization that have been designed for database systems supporting the hierarchical, network and relational models of data do not provide adequate mechanisms to support controlled ac ...

7 Operating systems: Active buffering plus compressed migration: an integrated solution to parallel simulations' data transport needs

Jonghyun Lee, Xiaosong Ma, Marianne Winslett, Shengke Yu

June 2002 **Proceedings of the 16th international conference on Supercomputing**

Full text available: pdf(302.82 KB) Additional Information: full citation, abstract, references, index terms

Scientific simulations running on parallel platforms output intermediate data periodically, typically moving the output to a remote machine for visualization. Due to the large data size and slow network, improvements in output and migration performance can significantly reduce simulation turnaround time. In this paper, we propose a novel simulation execution environment that integrates *active buffering* and *compressed migration* to hide and reduce the cost of output and migration. Ou ...

Keywords: active buffering, collective I/O, data migration, parallel I/O, scientific simulations

8 Self-replicating expressions in the Lambda Calculus

James Larkin, Phil Stocks

January 2004 **Proceedings of the 27th conference on Australasian computer science - Volume 26**

Full text available: pdf(160.36 KB) Additional Information: full citation, abstract, references

The study of self-replicating structures in Computer Science has been taking place for more than half a century, motivated by the desire to understand the fundamental principles and algorithms involved in self-replication. The bulk of the literature explores self-replicating forms in Cellular Automata. Though trivially self-replicating programs have been written for dozens of languages, very little work exists that explores self-replicating forms in programming languages.This paper reports initi ...

Keywords: Lambda Calculus, cellular automata, functional programming, self-replicating programs

9 Concurrency and availability as dual properties of replicated atomic data

M. Herlihy

April 1990 **Journal of the ACM (JACM)**, Volume 37 Issue 2

Full text available: pdf(1.77 MB) Additional Information: full citation, abstract, references, citings, index terms, review

A replicated data object is a typed object that is stored redundantly at multiple locations in a distributed system. Each of the object's operations has a set of quorums, which are sets of sites whose cooperation is needed to execute that operation. A quorum assignment associates each operation with its set of quorums. An operation's quorums determine its availability, and the constraints governing an object's quorum assignments determine the range of availability properties realizable by r ...

10 Session 3: Minimal replication cost for availability

Haifeng Yu, Amin Vahdat

July 2002 **Proceedings of the twenty-first annual symposium on Principles of distributed computing**

Full text available: pdf(1.18 MB) Additional Information: full citation, abstract, references, citings

Today, the utility of many replicated Internet services is limited by availability rather than raw performance. To better understand the effects of replica placement on availability, we propose the problem of *minimal replication cost for availability*. Let replication cost be the cost associated with replica deployment, dynamic replica creation and teardown at *n* candidate locations. Given client access patterns, replica failure patterns, network partition patterns, a required consis ...

11 Session 8B: scalability and robustness: Improving fault-tolerance by replicating agents

Alan Fedoruk, Ralph Deters

July 2002 **Proceedings of the first international joint conference on Autonomous agents and multiagent systems: part 2**

Full text available: pdf(168.43 KB) Additional Information: full citation, abstract, references, index terms

Despite the considerable efforts spent on developing multi-agent systems the actual number of deployed systems is surprisingly small. One of the reasons for the significant gap between developed and deployed systems is their brittleness.The absence of centralized control components makes it difficult to detect and treat failures of individual agents thus risking fault-propagation that can seriously impact the performance of the system. Using redundancy by replication of individual agents within ...

Keywords: FIPA-OS, fault-tolerance, replicating agents

12 Networks: Search and replication in unstructured peer-to-peer networks

Qin Lv, Pei Cao, Edith Cohen, Kai Li, Scott Shenker

June 2002 **Proceedings of the 16th international conference on Supercomputing**

Full text available: pdf(510.93 KB) Additional Information: full citation, abstract, references, citings, index terms

Decentralized and unstructured peer-to-peer networks such as Gnutella are attractive for certain applications because they require no centralized directories and no precise control over network topology or data placement. However, the flooding-based query algorithm used in Gnutella does not scale; each query generates a large amount of traffic and large systems quickly become overwhelmed by the query-induced load. This paper explores, through simulation, various alternatives to Gnutella's query ...

Keywords: peer-to-peer, replication, search, unstructured

13 Replication requirements in mobile environments

David Ratner, Peter Reiher, Gerald J. Popek, Geoffrey H. Kuenning
November 2001 **Mobile Networks and Applications**, Volume 6 Issue 6

Full text available: pdf(162.59 KB) Additional Information: full citation, abstract, references, index terms

Replication is extremely important in mobile environments because nomadic users require local copies of important data. However, today's replication systems are not "mobile-ready". Instead of improving the mobile user's environment, the replication system actually hinders mobility and complicates mobile operation. Designed for stationary environments, the replication services do not and cannot provide mobile users with the capabilities they require. Replication in mobile environments requires fu ...

Keywords: file systems, mobile computing, replication

14 Topics in Physical Design: Temporal logic replication for dynamically reconfigurable FPGA partitioning

Wai-Kei Mak, Evangeline F. Y. Young
April 2002 **Proceedings of the 2002 international symposium on Physical design**

Full text available: pdf(245.29 KB) Additional Information: full citation, abstract, references, index terms

In this paper, we propose the idea of temporal logic replication in dynamically reconfigurable field-programmable gate array partitioning to reduce communication cost. Temporal logic replication has never been explored before. We define the min-area min-cut replication problem given a *k*-stage temporal partition satisfying all temporal constraints and devise an optimal algorithm to solve this problem. We have also devised a flow-based replication heuristic in case there is a tight area bou ...

15 Resource sharing for replicated synchronous groupware

James Begole, Randall B. Smith, Craig A. Struble, Clifford A. Shaffer
December 2001 **IEEE/ACM Transactions on Networking (TON)**, Volume 9 Issue 6

Full text available: pdf(352.19 KB) Additional Information: full citation, abstract, references, index terms

We describe problems associated with accessing data resources external to the application, which we term *externalities*, in replicated synchronous collaborative applications. Accessing externalities such as files, databases, network connections, environment variables, and the system clock is not as straightforward in replicated collaborative software as in single-user applications or centralized collaborative systems. We describe *ad hoc* solutions that add to development cost and com ...

Keywords: Collaborative work, concurrency control, distributed computing, file servers, object-oriented programming, software

16 Sort-last parallel rendering: Parallel rendering with k-way replication

Rudrajit Samanta, Thomas Funkhouser, Kai Li
October 2001 **Proceedings of the IEEE 2001 symposium on parallel and large-data visualization and graphics**

Full text available: pdf(587.04 KB) Additional Information: full citation, abstract, references, citings, index

terms

With the recent advances in commodity graphics hardware performance, PC clusters have become an attractive alternative to traditional high-end graphics workstations. The main challenge is to develop parallel rendering algorithms that work well within the memory constraints and communication limitations of a networked cluster. Previous systems have required the entire 3D scene to be replicated in memory on every PC. While this approach can take advantage of view-dependent load balancing algorithm ...

Keywords: Parallel rendering, cluster computing, computer graphics systems, interactive visualization

17 The costs and limits of availability for replicated services
Haifeng Yu, Amin Vahdat
October 2001 **ACM SIGOPS Operating Systems Review , Proceedings of the eighteenth ACM symposium on Operating systems principles**, Volume 35 Issue 5
Full text available: pdf(1.46 MB) Additional Information: full citation, abstract, references, citings, index terms

As raw system and network performance continues to improve at exponential rates, the utility of many services is increasingly limited by availability rather than performance. A key approach to improving availability involves replicating the service across multiple, wide-area sites. However, replication introduces well-known tradeoffs between service consistency and availability. Thus, this paper explores the benefits of dynamically trading consistency for availability using a *continuous consi ...*

18 Min-cut partitioning with functional replication for technology mapped circuits using minimum area overhead
Wai-Kei Mak
April 2001 **Proceedings of the 2001 international symposium on Physical design**
Full text available: pdf(202.30 KB) Additional Information: full citation, abstract, references, index terms

Logic replication is known to be an effective technique to reduce the number of cut nets in partitioned circuits. A new replication model calledfunctional replicationis particularly useful for partitioning technology mapped circuits [7]. Functional replication differs from traditional replication because it considers the functional dependency of the different output signals of a logic cell on its input signals. Functional replication can lead to a higher reduction in the nu ...

Keywords: circuit partitioning, logic replication, minimum cut

19 Data replication for external searching in static tree structures
Susanne E. Hambrusch, Chuan-Ming Liu
November 2000 **Proceedings of the ninth international conference on Information and knowledge management**
Full text available: pdf(244.24 KB) Additional Information: full citation, references, index terms

20 A meta model and an infrastructure for the non-transparent replication of object databases
Werner Dreyer, Klaus R. Dittrich
November 2000 **Proceedings of the ninth international conference on Information and knowledge management**
Full text available: pdf(179.36 KB) Additional Information: full citation, references, index terms

Keywords: object databases, object replication, replication meta models

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